

## *About this conference*

Regulated waterways provide important services such as flood regulation, power generation with low greenhouse gas emissions, and energy storage. Nevertheless, the damming and regulation of rivers affects both upstream and downstream environments, and does so at a range of scales. Despite their large footprints, considerable ecological function remains in these regulated systems.

The wealth of research that continues to emerge increases our understanding of ecosystem processes within regulated rivers with the potential to mitigate footprint and operational impacts to plants, fish, and wildlife. Several multi-year studies on large reservoir systems in the Columbia River basin (e.g., Arrow Lakes and Kinbasket) are now nearing completion and these results may play a role in determining future operational scenarios under the Columbia River Treaty.

This 2019 conference, which is a follow-up to the 2015 “Regulated Rivers: Environment, Ecology and Management” conference held in Castlegar, will provide an opportunity for scientists and managers to share results of research completed since 2015 on regulated river environments, processes and operations in the Pacific Northwest and elsewhere.

## *Our thanks go out to...*

**Thank you** to our speakers and the people who brought posters and disptev e lays. We are grateful for your willingness to share your expertise with us.

**Thank you** to the members of the organizing committee for this event:

- Catherine Craig, Hemmera
- Ryan Gill, Hemmera
- Virgil Hawkes, LGL Ltd. Environmental Research Associates
- Mike Miller, LGL Ltd. Environmental Research Associates
- Carrie Nadeau, Associated Environmental Consultants Inc.
- Pier van Dishoeck, Selkirk College
- Brendan Wilson, Selkirk College
- Michael Zimmer, Okanagan Nation Alliance
- Hailey Ross and Mia King, Columbia Mountains Institute

**Thanks** for the help of our conference volunteers, Catherine Craig & Carley Simpson

***Conference proceedings will be available at [www.cmiae.org](http://www.cmiae.org)***

An email notification will be sent to all conference participants when this document is posted.

## *Thanks to our conference sponsors!*



# *Conference Agenda*

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***Wednesday, May 8, 2019***

8:00 am **Registration**

8:30 am **Welcoming remarks**

***FLOW MANAGEMENT AND RIVER REGULATION***

8:50 am **Ecosystem impacts of dams in the East and West Kootenays**, Greg Utzig, Kutenai Nature Investigations Ltd. (presented by Alan Thomson, Mountain Station Consultants)

9:10 am **Assessing the relationship between flow and egg predator abundance within white sturgeon (*Acipenser transmontanus*)**, Paul Grutter, Golder Associates Ltd.

9:30 am **Long-term consequences of anthropogenic flow fluctuations on population dynamics of coho salmon (*Oncorhynchus kisutch*)**, Pascale Gibeau, SFU, Earth to Ocean Research Group

9:50 am **A history of flow management on the lower Columbia River downstream of Hugh Keenleyside Dam for spawning rainbow trout**, James Baxter, BC Hydro

10:10 am ***Refreshment and Networking Break***

10:30 am **Hydrological dynamics driving potential change in reservoir inflows: A multi-scale approach in one regional landscape**, Martin Carver, North Kootenay Lake Water Monitoring Project

10:50 am **Assessing impacts of a new flow regime along the lower Duncan River, British Columbia**, Mary Louise Polzin, VAST Resource Solutions Inc.

11:10 am **The complicating influences of river regulation on productivity in riverine habitats**, Jason Schleppe, Ecoscape Environmental Consultants Inc.

11:30 am **Small hydro flow fluctuations & tailed frogs: implications for run-of-river operations**, Griffin Dare, SFU, Earth to Ocean Research Group

11:50 am ***Lunch Break and Networking***

***ECOSYSTEM FUNCTION***

1:00 pm **Effects of climatic and flow-path modification on water quality in the upper Columbia Basin**, Janice Brahney, Utah State University, Logan UT, and Jeff Curtis, University of British Columbia, Okanagan Campus

1:30 pm **Incorporating ecosystem function in a renegotiated Columbia River Treaty**, Martin Carver, Upper Columbia Basin Environmental Collaborative

1:50 pm **Culturally-informed ecosystem-based management: integration of Indigenous laws**, Bill Green, Ktunaxa Nation Council, and Mark Thomas, Shuswap Indian Band/Shuswap Nation Tribal Council

2:20 pm ***Refreshment and Networking Break***

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	<b><i>Wednesday, May 8, 2019, continued</i></b>
	<b><i>LIGHTNING ROUND</i></b>
2:40 pm	<b>Northern pike in the lower Columbia and Pend d'Oreille rivers – 2018 Update</b> , Crystal Lawrence, Wood Environment & Infrastructure Solutions
2:50 pm	<b>Stock assessment and monitoring of burbot in Lake Roosevelt on the Columbia River in Washington</b> , David Roscoe, Golder Associates Ltd.
3:00 pm	<b>Exploring ecosystem enhancement in a stable Arrow Lakes reservoir operation</b> , Alan Thomson, Mountain Station Consultants
3:10 pm	<b>Okanagan fish/water management tool (FWMT)</b> , Dawn Machin, Okanagan Nation Alliance
3:20 pm	<b>Columbia Basin aquatic invasive species partnerships and collaboration</b> , Khaylish Fraser, Central Kootenay Invasive Species Society
3:30 pm	<b>POSTER SESSION AND EVENT SOCIAL</b> Poster introductions followed by networking social (refreshments, beer, and wine)
5:30 pm	<b>Keynote speaker Eva Schindler – open to the public</b>

**Wednesday, May 8, 5:30 – 6:30 pm**

We are pleased to announce Eva Schindler as our keynote speaker for this conference. Eva is a Resource Manager with the province of BC (Ministry of Forests, Lands, Natural Resource Operations and Rural Development), working along with her teams on ecosystem restoration, compensation projects, and habitat related items throughout the Columbia Region.

Eva will give an overview of hydroelectric impacts to aquatic and terrestrial ecosystems in the Columbia Region and restoration/compensation strategies used to mitigate the impacts.

This portion of the agenda is open to the public and is free to attend – all are welcome!

***Professional development hours***

Are you tracking your continuing education hours for professional development? We can send you a certificate regarding your attendance at this event; sign-up at the registration desk.



This conference has been approved by the Society for Ecological Restoration (SER) as a for-credit event! Students will earn 7 continuing education credits with SER's Certified Ecological Restoration Practitioner (CERP) program. Check at the registration desk for more information about CERP and how to claim these credits.

***Conference participant list***

A list of conference participants is posted near the registration desk. You are encouraged to look up contact information for people you have met at the conference. Because of CMI's privacy policy, this list will not be available for distribution after the conference.

## ***Thursday, May 9, 2019***

8:30 am	<b>Check-in</b>
9:00 am	<b>Welcome back by Master of Ceremonies</b>
	<b><i>MENSURATION AND ESTIMATION: CHALLENGES AND APPROACHES</i></b>
9:10 am	<b>Significance, thresholds and decision making</b> , Joe Thorley, Poisson Consulting Ltd.
9:30 am	<b>Long-term fish community monitoring for the Kwoiek Creek hydroelectric project: a look at the preliminary results</b> , Rob Hoogendoorn, Associated Environmental Consultants Inc.
9:50 am	<b>Twenty years of learning: factors affecting the success of nutrient additions for restoring fish populations and the recreational fishery in Arrow Lakes reservoir</b> , Steve Arndt, Ministry of Forests, Lands, Natural Resource Operations and Rural Development
10:10 am	<b>Monitoring white sturgeon (<i>Acipenser transmontanus</i>) spawning in the middle Columbia River below Revelstoke Dam</b> , Louise Porto, Wood Environment & Infrastructure Solutions
10:30 am	<b><i>Refreshment and Networking Break</i></b>
	<b><i>WILDLIFE HABITAT RELATIONSHIPS</i></b>
10:50 am	<b>Terrestrial arthropod monitoring in Kinbasket Reservoir</b> , Charlene Wood, LGL Ltd. Environmental Research Associates
11:10 am	<b>Diversion dams reduce thermal safety margin for amphibian larvae</b> , Rylee Murray, SFU, Earth to Ocean Research Group
11:30 am	<b>Kootenai River burbot, <i>Lota lota maculosa</i>, early life stage experimental releases identify recruitment bottlenecks</b> , Shawn Young, Kootenai Tribe of Idaho
11:50 am	<b><i>Lunch and Networking Break</i></b>
1:00 pm	<b>Wildlife habitat and opportunities for restoration in the drawdown zones of hydroelectric reservoir</b> , Virgil Hawkes, LGL Ltd. Environmental Research Associates
	<b><i>RESTORATION AND ENHANCEMENT</i></b>
1:30 pm	<b>Deer creek drawdown zone fish habitat rehabilitation: a pilot project for lower Arrow Lakes tributary kokanee access improvements 2015 – 2018</b> , Evan Smith, Okanagan Nation Alliance
1:50 pm	<b>Understanding the ecology of recovery in reservoirs across southern British Columbia</b> , Carrie Nadeau, Associated Environmental Consultants Inc., and David Polster, Polster Environmental Services Ltd.
2:10 pm	<b><i>Refreshment and Networking Break</i></b>
2:30 pm	<b>Regreening a semi-barren reservoir drawdown zone: intractable challenge or achievable dream?</b> , Michael Miller, LGL Ltd. Environmental Research Associates
2:50 pm	<b>Reservoir regulation influences vegetation in the draw-down and delta zones of the Duncan Reservoir, British Columbia</b> , Stewart Rood, University of Lethbridge
3:10 pm	<b>Closing comments</b> , Eva Schindler, BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
3:20 pm	<b>Thank you and goodbye from CMI</b>

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